

## CLAIMS

1. A method for equalizing channel quality differences in a WDM system having N transmitters, N receivers and N channels, the method comprising  
5 the steps of :
  - measuring separately a bit error rate of each of the N channels in each of the N receivers, the bit error rates being respectively measured at different decoder thresholds and phase angles, deviating from an optimum value, in N first decision circuits;
  - 10 determining a bit error rate at an optimum operating point by extrapolating the measured bit error rates for each of the N channels;
  - determining a Q value for each of the N channels from the respectively associated extrapolated bit error rates;
  - calibrating the N transmitters via a control device by raising levels of the  
15 channels having a small Q value and lowering levels of the channels having a large Q value at a ratio of the respective Q value of the channel, an aggregate level of all N channels in the N transmitters being kept constant; and
  - repeating all of the above steps until all N Q values of the N channels in the N receivers are equal.
- 20 2. A method for equalizing channel quality differences in a WDM system as claimed in claim 1, the method further comprising the step of:
  - carrying out preemphasis, prior to the step of measuring, in which a level distribution in the N transmitters is changed such that OSNR values of the N  
25 channels are matched in the N receivers by measuring OSNR values in the N receivers and controlling the level distribution in the N transmitters via the control device.
3. A method for equalizing channel quality differences in a WDM  
30 system as claimed in claim 1, wherein level adjustment of the WDM system to equal Q values is carried out via external measuring equipment during installation.

4. A method for equalizing channel quality differences in a WDM system as claimed in claim 1, the method further comprising the step of:  
measuring the NQ values of the N channels in a second decision circuit,
- 5 associated with the respective receiver, during operation of the WDM system.